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**Should Organizational Maintenance be
Transferred from Maneuver Units?**

**A Monograph
by
Major Mark J. Davis
Quarter Master**

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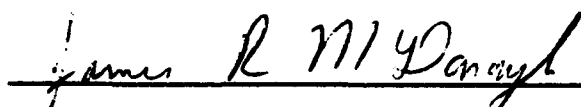
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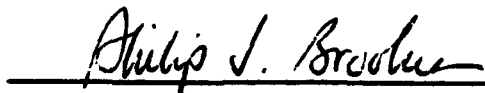
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ABSTRACT

**SHOULD ORGANIZATIONAL MAINTENANCE BE TRANSFERRED FROM
MANEUVER UNITS?** by MAJ Mark J. Davis, USA, 36 pages.

This monograph discusses the proposed transfer of organizational maintenance responsibility from maneuver units to the forward support battalion. The proposed transfer is a part of the battlefield maintenance system (BMS) doctrine currently under review by the U.S. Army Training and Doctrine Command.

The monograph includes a survey of the maintenance doctrine and practices of the British, Soviet, and German armies and attempts to draw conclusions about the efficacy of transferring maintenance responsibility out of maneuver units. The monograph organizes discussion about the impact of the proposed change in maintenance doctrine into sections governing the physical, moral, and cybernetic domains of battle.

The monograph concludes that the transfer of organizational level maintenance responsibility out of maneuver units to the forward support battalion is a bad idea. Productivity increases are better obtained by consolidating maintenance activities of the direct support- and general support- levels of maintenance.

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There is nothing clearer in the study of
war than the need for adequate force
sustainment.

- GEN Vuono, Army Chief of Staff

This monograph identifies some of the tactical implications inherent to the proposed transfer of unit level maintenance responsibility from maneuver units to combat service support units. The implications fall in the physical, moral, and cybernetic domains of battle and apply to the commander, staff, and individual soldiers of both maneuver and combat service support units. The nature and magnitude of the implications warrant reconsideration of the proposed transfer of maintenance responsibility.

The first section of the monograph identifies the vision of maintenance doctrine contained in AirLand Operations. In short, that vision includes a greatly streamlined combat service support structure, heavy reliance on emerging technologies, and the unweighting of selected echelons of the Army from logistics burdens.

The second section of the monograph outlines the operational concept of the battlefield maintenance system (BMS), the new ground maintenance doctrine proposed by the U.S. Army Combined Arms Support Command (CASCOM). BMS includes the transfer of unit level

maintenance responsibility from maneuver units to combat service support units.

The third section of the monograph looks at the maintenance doctrine of the Soviet, German, and British armies. Each of these armies acknowledges the need to repair inoperable equipment as quickly and as far forward as possible. They also share the belief that a strong commitment to unit level maintenance is a requirement for achieving a desirable level of operational readiness.

The fourth section of the monograph identifies the tactical implications of transferring responsibility for unit level maintenance within the framework of the physical, moral, and cybernetic domains of battle. The framework proves to be an effective way to group and consider the implications.

The last section of the monograph argues for a reevaluation of BMS in light of its tactical implications on maneuver units and combat service support units. The maintenance doctrines of the Soviet, German, and British armies suggest that we might improve our operational readiness if we retain our unit level maintenance system and alternatively consider consolidating our direct support- and general support- level maintenance efforts.

AirLand Operations

AirLand Operations describes how the Army envisions conducting future operations as a land component of military forces in joint, combined and interagency operations across the operational continuum. Under this concept, the fundamental mission of the Army is to project combat power globally.¹

AirLand Operations calls for the unweighting of selected echelons of Army forces so that critical maneuver commanders are unburdened logistically. The purpose of this unweighting is to improve the ability of maneuver commanders to focus on the joint and combined arms fight.² Specifically, AirLand Operations calls for the removal of certain logistical responsibilities from a unit or echelon to make it more agile, deployable, and tailorable. One of the assumptions is that the requisite unweighting can be accomplished by reducing redundancies in combat service support organizations, and by focusing activities at echelons that produce the greatest efficiencies.³

In the area of maintenance support, the desire to unweight units logistically has been the driving force behind a study to determine the correct balance between direct support and organizational maintenance responsibilities. That study concluded that the Army ought to decrease its emphasis on organizational level

maintenance, and transfer some responsibility to combat service support maintenance units.⁴

The decision to transfer responsibility for performing organizational maintenance tasks above operator/crew level from maneuver units is based on several assumptions. The first assumption is that embedded technologies within new weapon systems, vehicles, and diagnostic equipment will provide significant improvements in the ability of operators and mechanics to both diagnose faults and identify specific components to be replaced.⁵

The second assumption is that future recovery vehicles will enable maintenance personnel to rapidly recover and repair damaged equipment from forward areas. No one knows, however, whether recovery vehicles will be purchased in sufficient quantities to support distribution down to the unit level.

The third assumption is related to repair parts supply. The Army has independently committed itself to discontinue the practice of stocking repair parts at the unit level. The result is that the number and type of repair parts immediately available to units will be limited to a small number of combat spares. The vast majority of the repair parts needed to repair inoperable equipment will be located in the forward support battalion (FSB).

The final assumption deals with the nature of battle at the brigade level. Under the concept of AirLand Operations, combat operations at the brigade level and below are expected to be unprecedented in intensity, but short in duration. The implication is that few weapons systems and vehicles damaged during the conduct of the current battle will return to influence that battle. Those that are returned to battle will be fixed by replacing defective component parts rather than by repairing them.⁶

The U.S. Army Training and Doctrine Command (TRADOC), and its subordinate, CASCOM, have evaluated our existing maintenance doctrine and determined that it fails to meet the challenges of AirLand Operations. As a result, they have proposed a new maintenance doctrine, the battlefield maintenance system.

The Battlefield Maintenance System (BMS)

The Battlefield Maintenance System changes the maintenance responsibilities of maneuver units and their supporting maintenance units. Figure 1 shows the levels of maintenance under our current doctrine and as prescribed by BMS.

Depot	G.S.	D.S.	Unit	Oper/crew
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Current

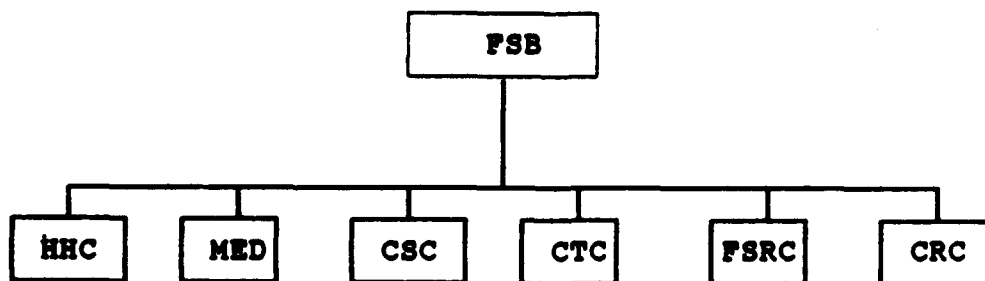
Depot	G.S.	Field Maintenance	Unit
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Proposed (BMS)

figure 1
Levels of Maintenance ⁷

Under BMS, the maneuver unit is only responsible for operator/crew level maintenance tasks. The forward support battalion is responsible for field maintenance. Field maintenance is a combination of what is currently categorized as unit level and direct support level maintenance.

The proposed change in maintenance responsibilities prompted a corresponding restructuring of the forward support battalion. Figure 2 shows its proposed structure.



Forward Support Battalion under BMS

figure 2⁸

The Combat Repair Company (CRC) of the forward support battalion is responsible for field maintenance for the maneuver battalions of a brigade. The Forward Support Repair Company (FSRC) is responsible for field maintenance for the artillery, engineer, air defense, and other divisional units operating in the brigade area.⁹

The commander of the CRC serves as the materiel readiness officer of the brigade. He commands the CRC and has full tasking authority over the FSRC. He directs the maintenance efforts of the forward support battalion from his Materiel Operations Center (MOC), a command and control center located in the forward portion of the brigade support area.¹⁰

The maintenance assets of maneuver units are combined with the maintenance support teams (MSTs) of the current DS maintenance companies to resource the CRC and the FSRC under BMS. The maneuver units have no organic maintenance personnel following the transfer of maintenance responsibility to the forward support battalion.

The Soviet Army

The Soviet principles of operational art demand that battalions, regiments, and divisions be highly

mobile and possess great firepower. Soviet Army leaders and force designers believe that their combat formations cannot afford to be burdened by a heavy, organic, logistics tail that would reduce their mobility.¹¹ In response to these concerns, Soviet logistics planners have developed a maintenance doctrine which minimizes reliance on organic maintenance assets at the lowest tactical levels.

AirLand Operations and the BMS make similar demands of U.S. logistics structures at the battalion level. It is very instructive, therefore, to study the experience of the Soviets in supporting their maneuver units.

In short, the execution of current Soviet maintenance doctrine appears incapable of rapidly returning damaged equipment to operational readiness in the face of high tempo operations like those envisioned in AirLand Operations. While the Soviets believe that they can both fix forward and centrally control the majority of their maintenance assets, the truth is that they cannot do both outside of operational conditions similar to those they encountered in the latter stages of World War II.¹²

Soviet maintenance doctrine includes the echelonment of maintenance resources at every level from battalion through front. The maintenance resources organic to the maneuver battalions and

regiments are austere, however, and contribute little to the Soviet repair effort. The majority of the repair assets in the Soviet Army are centrally controlled within army and front level organizations.

A Soviet motorized rifle or tank battalion has an organic supply and maintenance platoon, referred to as a repair section. The repair section consists of two or three workshop vehicles under the command of a technical deputy (NCO). If the section cannot return a vehicle or weapon system to battle within one hour, they drag it off the side of the route and leave it for the regiment to recover.

A Soviet regiment has a maintenance company consisting of three to five armored recovery vehicles and up to twenty workshop and transport vehicles. The main task of the regimental maintenance company is to clear routes of destroyed or disabled equipment and recover damaged equipment to an assembly point. The regimental maintenance company repairs equipment if it will return the equipment to the regimental order of battle, doctrinally in three hours or less.¹³

A Soviet division has a repair battalion which includes a recovery team of five or six armored recovery vehicles, a transport and support platoon, a light equipment repair platoon, and three repair and maintenance companies. The repair and maintenance

companies specialize in the repair of armored fighting vehicles, artillery, trucks, and light equipment.

The principal weakness of the Soviet maintenance system is its inability to quickly repair weapon systems and return them to battle during defensive operations and during high intensity, offensive operations. The centrally controlled maintenance assets of the army and front are not responsive enough, nor flexible enough, to fix forward in a timely fashion. The Soviet maintenance adage remains, "if it cannot be fixed in 10 to 30 minutes, leave it."¹⁴

The Soviet experience in Afghanistan prompted a reassessment of their maintenance doctrine. The nature of counterinsurgency operations caused them to locate army and front level maintenance workshops far forward with the maneuver units.¹⁵ The Soviets enjoyed success with the arrangement and may start to experiment with larger organic maintenance sections in their maneuver units.¹⁶

The German Army

The German Army is currently redefining its maintenance doctrine as part of its overall restructuring. The new doctrine retains organic maintenance capability at the maneuver battalion level. At the same time, the Germans are consolidating brigade

maintenance companies with the divisional maintenance battalion to form a maintenance regiment at division level. The German General Staff believes that the centralization of second and third echelon repair assets offers the greatest potential for improved maintenance efficiency.¹⁷

The recently replaced German maintenance doctrine included organic maintenance units at battalion through division level and an echeloned repair classification similar to that of the U.S. Army. The sole exception was to assign responsibility for performing second and third echelon repairs, equivalent to U.S. direct support and general support level repairs, to both the brigade maintenance companies and the divisional maintenance battalion. The brigade maintenance companies performed maintenance for units assigned to their brigade, and the maintenance battalion supported units in the division base. These responsibilities remain unchanged under their new doctrine. The only difference is that all company and larger maintenance units now belong to the divisional maintenance regiment.

The German Army appears to be the originator of the distinction made under BMS between maintenance services and repair. German operators and crews are only responsible for servicing assigned equipment in a manner similar to the preventative checks and services

(PMCS) performed by U.S. operators/crews. All repairs are made by designated maintenance personnel.

The maintenance services section of a German maneuver battalion is responsible for what the U.S. Army currently calls unit level maintenance. A key distinction however, is that the soldiers in the maintenance services section belong to the branch of their unit, i.e. combat arms.¹⁸ U.S. maintenance personnel carry maintenance military occupational specialties (MOSs).

German maneuver battalions have an organic recovery team, and the responsibility to evacuate damaged equipment to maintenance collection points in the battalion and brigade rear areas. If the evacuation assets of the maneuver unit are overwhelmed, the divisional maintenance regiment provides backup recovery assets.

The divisional maintenance regiment is a large organization of over twenty-nine hundred personnel, including some of the maintenance assets formerly assigned to the German Territorial Forces.¹⁹ The regiment consists of two maintenance battalions that provide third echelon maintenance support to all units in the division. There is concern among German officers that the size of the maintenance regiment may prove unwieldy. U.S. officers have expressed a similar

concern about the size of the forward support battalion (FSB) under BMS.

The British Army

British maintenance doctrine has closely paralleled U.S. maintenance doctrine for the last several decades. Both armies have embraced the concepts of echelonment of maintenance resources and forward repair. While the British Army did not follow the U.S. Army restructuring of division level combat service support into forward support battalions and main support battalions in the early 1980s, the two armies remain similar in their maintenance doctrine today.

The British Army is firmly committed to providing organic maintenance capability to each of its maneuver battalions. Each maneuver battalion has an organic Light Aid Detachment (LAD). A part of the LAD is suballocated to each of the companies of the battalion in the form of fitter sections.²⁰

Each fitter section consists of six to eight Royal Electrical and Mechanical Engineer (REME) tradesmen and two or more repair/recovery vehicles. The section carries out running repairs to company vehicles and

maintains a limited number of assemblies and other repair parts.

Another part of the LAD stays at battalion level and provides backup repair and recovery support to the battalion. LADs are responsible to recover damaged equipment to collection points in the brigade rear area.

A key difference between the LAD and its American counterpart, the battalion maintenance platoon, lies in the stockage of repair parts. The LAD carries one or two major assemblies and a limited number of other repair parts. There is no British equivalent to the U.S. maneuver battalion's prescribed load list (PLL).

The British consolidate direct support and general support maintenance capabilities at division level armoured workshops. Each British division has two workshops, each organized into one or more forward repair groups (FRGs) and main repair groups (MRGs).

A forward repair group provides direct support level maintenance to a maneuver brigade. The mechanics assigned to the forward repair group repair damaged equipment by means of component replacement, both as a backup to the LADs operating in the brigade area and as a higher echelon of maintenance repair than the LADs.

The forward repair groups dispatch a forward repair team to support each of the maneuver battalions in the brigade. These teams are analogous to the

maintenance support teams (MSTs) organic to the maintenance company of a forward support battalion in a U.S. heavy division. Forward repair groups are responsible for evacuating damaged equipment which does not qualify for forward repair to backload points in the division rear for further evacuation to a theater or depot level maintenance workshop.

The main repair groups provide general support maintenance to the division. They operate on an area basis and are employed by the division-level maintenance commander to maximize flexibility and allow him to weight the division main effort. The main repair groups have the largest stock of repair parts in the division, and are authorized to cannibalize damaged equipment for serviceable repair parts.²¹

The British Army will undoubtedly undergo a restructuring over the next few years as economic and political pressures dictate smaller British defense expenditures. It is not clear at this time however, what, if any, changes such restructuring will force on British maintenance doctrine.

At present we can conclude that the British have no intention of transferring maintenance assets out of maneuver units. They continue to believe that the maneuver commander must exercise control over his own maintenance assets, providing him with the flexibility and responsiveness he requires. At the same time, the

British believe that they achieve certain efficiencies by consolidating direct support and general support level maintenance at division level.

Physical Domain

If Napoleonic armies 'marched on their stomachs', modern mechanized armies depend on the quality of their maintenance, repair and recovery services.²²

The Army's adoption of BMS would have several tactical implications in the physical domain of battle. The most serious implication centers on the ability of company maintenance teams from the CRC and the FSRC to repair damaged equipment at or near the original site of failure. AirLand Operations calls for repair as far forward as possible.

Currently maneuver units are required to establish and operate company maintenance teams in the area of the unit's combat trains. They are required to establish organizational maintenance collection points as necessary and recover seriously damaged equipment to the unit field trains in the BSA.

Maintenance support teams (MSTs) from the direct support maintenance company of the forward support battalion are supposed to locate forward with the combat trains of the maneuver units and repair equipment brought to that location by the maneuver unit. The experience of observer/controllers at the National Training Center (NTC) is that maneuver units and FSBs do not use their maintenance resources in accordance with this doctrine.

One observation report from an observer/controller at the NTC noted, "MSTs don't [sic] fix forward, they migrate to the rear." During that particular rotation, the MSTs completed more than sixty percent of their work at the brigade maintenance collection point rather than forward with the maneuver battalions.²³

Another NTC observer reported the aversion of logistics staff officers to fix equipment forward in the battle area. In this case, the brigade S-4 ordered battalion task force S-4s to routinely recover equipment to the rear so that the "right people" could get the job done. He rationalized that the maintenance work in the rear would be accomplished more quickly and effectively than in the forward areas. It is impossible to discern whether the brigade S-4 was commenting on the skill of unit mechanics or both unit mechanics and the MSTs. In either case, there is a

documented prejudice against relying on a fix forward scheme of support.²⁴

These observations are representative of others made at NTC during the last several years. They suggest that forward maintenance elements do not operate forward in consonance with our published doctrine. We may be making a mistake to assume that BMS, with its greater reliance on dispatching maintenance assets forward from rear areas, will be better accepted and executed by units in the field than is our current doctrine.

A second tactical implication concerns the resourcing of the CRC and the FSRC. The Army has historically shortchanged maintenance units in terms of the numbers and grades of personnel assigned, the numbers and types of vehicles authorized, and the sufficiency of communications equipment. The transfer of unit maintenance responsibility for all units operating in the brigade area to the CRC and FSRC of the FSB invites severe problems if those two units are inadequately resourced. The following observations support this concern.

An article in a recent issue of Military Review contained the comments of a field artillery battalion commander who saw combat in the Persian Gulf during Operation Desert Shield/Desert Storm. He said, "CSS doctrine is fine and makes sense. However, a forward

support battalion or main support battalion in a heavy division is not structured to execute the published doctrine. Give those commanders the assets to do their job."²⁵

GEN Saint made an observation about the maintenance resources of an armor battalion in 1986. He wrote that armor battalion maintenance doctrine was not supported by the authorizations contained in the Table of Organization and Equipment (TOE). He implied that it was impossible to evaluate the effectiveness of maintenance doctrine inside an armor battalion because it was inadequately resourced to execute that doctrine.²⁶

A third tactical implication in the physical domain centers on the availability of repair parts. In 1987, the General Accounting Office (GAO) conducted a study of the maintenance practices of five active duty divisions. The inspectors found that a lack of repair parts was the primary cause of forty-two to seventy-nine percent of the downtime on selected equipment reported not ready for combat.²⁷

It is possible that repair parts supply is the long pole in the tent. The effect of transferring unit maintenance responsibility from maneuver units to the FSB may be masked by the impact of the separate Army decision to disestablish PLLs. The tactical implication is that these two actions, repair parts

supply and maintenance responsibility, are inextricably connected. The Army should conduct a test of mechanic productivity as a function of repair parts stockage location. The results of that study would allow Army logisticians to better understand the impact of the decision to transfer unit maintenance responsibility to FSBs.

A fourth tactical implication in the physical domain centers on the availability and efficient use of diagnostic test equipment. The U.S. Army is shifting away from using "weapon-systems-specific" diagnostic test equipment toward systems that can isolate faults in subsystems and components from a number of different weapon systems.²⁸ This type of equipment is increasingly sophisticated and expensive. The Army must determine the level at which this equipment can be most productively employed. The unit level may not be the best place.

The Army has conducted several studies measuring unit mechanic use of diagnostic test equipment. The GAO study cited above determined that organizational mechanics do not make effective use of test and diagnostic equipment to troubleshoot vehicle failures.²⁹ In fact, some units reported that diagnostic test equipment was used for less than twenty percent of the maintenance failures for which it was designed.³⁰

One reason unit mechanics fail to make effective use of the available diagnostic and test equipment is their level of training. The Army teaches system mechanics only twenty-nine percent of the critical tasks for the M-1 tank. Unit commanders are required to train the mechanic on the remainder of the critical tasks.³¹

Under BMS, the consolidation of unit mechanics and direct support level mechanics in the CRC and the FSRC may result in better trained mechanics and more productive use of diagnostic test equipment. That possibility is a significant implication of the transfer in maintenance responsibility in the physical domain.

The other consideration is that the training and supervision of operators and crews in the performance of their assigned maintenance tasks may deteriorate with the transfer of maintenance personnel out of the maneuver unit. The GAO has noted that inadequate maintenance knowledge and supervision was responsible for creating many equipment failures and for failing to report others.³² It seems unreasonable to assume that operators and crews will perform their tasks better in the absence of organic maintenance expertise. It is important to note once again that the experience of the German Army is quite different from our own. The German Army assigns soldiers to maintenance services

who are of the same branch as the soldiers who fight the equipment. Perhaps the U.S. Army should consider the feasibility of training its combat arms soldiers to perform unit level maintenance tasks.

The final tactical implication in the physical domain is the impact of creating a field maintenance level of repair. Mechanics who have the expertise and the responsibility for performing all equipment repairs below the general support level may be more effective than the sum of the efforts of unit and direct support mechanics operating in our current maintenance system. This is pure conjecture. The Army needs to conduct a test to prove this.

Moral Domain

I hold it to be one of the simplest truths of war that the thing which enables an infantry soldier to keep going with his weapons is the near presence or the presumed presence of a comrade.³³

Maneuver commanders will voice the loudest cry in opposition to the proposed change in maintenance doctrine. While their initial concern will focus on the loss of organic resources and distrust in the

ability of others to adequately support them, maneuver commanders ought to carefully consider the implication of the change on the bonds of spirit which tie their unit together. The moral cohesion of maneuver units may be the most significant casualty of the change in maintenance doctrine embodied in the BMS.

The transfer of maintenance resources from the maneuver battalion to the forward support battalion strips away the ability of the maneuver commander to direct maintenance efforts in support of his scheme of maneuver. Under BMS, the maintenance assets belong to the commander of the Combat Repair Company (CRC) of the forward support battalion. The commander of the CRC may not share the same vision or priorities for support as a particular maneuver battalion commander. The maneuver commander has a problem then, as he retains responsibility for both mission accomplishment and the welfare of his soldiers, but does not retain the ability to directly affect their material condition.

This type of situation invites the decay of the bond of spirit between the maneuver battalion commander and his unit. It will not take long for the individual soldier to quickly realize that the maneuver battalion commander does not control or direct maintenance support when the soldier's weapon systems become inoperable. The soldier will learn that support is directed by a commander in the rear, the forward

support battalion. A serious problem results if the individual soldier perceives the maneuver commander as the "pusher" or "taskmaster", while he perceives the forward support battalion as the "sustainer" or "life giver". The allegiance of the individual combat soldier in such a case may be unclear, and that should trouble everyone.

Another potential cause of deterioration in the bond of spirit between the maneuver battalion commander and his men lies in the related functions of equipment recovery and medical evacuation. The transfer of maintenance personnel and equipment from the maneuver unit includes the transfer of responsibility to evacuate/recover damaged equipment to the rear. The CRC assumes this responsibility under BMS.

The maneuver unit, however, retains the responsibility to provide medical support to its soldiers through its organic medics and battalion aid station. A problem may arise when the functions of battlefield maintenance and medical support are not synchronized. The situation will certainly arise when a tank or fighting vehicle is damaged and requires immediate evacuation while at the same time injured crew members require medical attention. Who will coordinate the activities of the maneuver battalion and the CRC in providing critical maintenance and medical support to the crew? Like most synchronization

problems, the easy answer is the commander. In fact, the question needs to be answered more pragmatically.

The impact of combat service support functions on the cohesion among soldiers in combat units is undeniable. In the past, the bond between the combat and service support soldiers of a maneuver unit has been strong. In the battles in and around St. Vith during World War II, maintenance personnel frequently operated under artillery fire and engaged in small arms fights with enemy patrols, while continuing to repair damaged equipment. Combat soldiers interviewed after the war spoke of the strength they drew from the knowledge that their combat service support soldiers held firm when the battle was in doubt. ³⁴

The combat service support soldiers described above however, were organic to their maneuver unit. A soldier's view changes when his combat service support comes from outside the unit. A battalion commander during Operation Desert Shield/Desert Storm voiced a widely held opinion when he said, "Battalion guys made things happen - not logisticians." ³⁵

It shouldn't come as a surprise that soldiers within a unit view those outside the unit with a jaundiced eye, while boasting of the contributions of their own members. The phenomena is endemic to all units. The Army should be concerned about how soldiers would react to the transfer of organic maintenance

personnel out of their unit with a corresponding increased dependence on external support.

The cohesion of a maneuver unit in combat is tested by the growing isolation of the individual combat soldier. Military tactics, techniques and procedures, in consonance with improving technology, have created a battlefield where the individual soldier often fights an enemy he cannot see. French General De Negrier observed during the Boer War, "the invisibility of the enemy directly affects the morale of the soldier, the sources of his energy, and his courage."³⁶ The invisibility of friendly combat service support soldiers can have a similar effect.

Professor James J. Schneider of the School of Advanced Military Studies wrote, "the soldier who cannot see his enemy is inclined to see him everywhere."³⁷ A corollary to this is that the soldier who cannot identify his combat service support assets is inclined to believe they are not there.

The transfer of maintenance assets from maneuver units to the FSB does not mean that these assets will be invisible to the individual combat soldier. Nor does the transfer of maintenance personnel necessarily imply that they will be less courageous in doing their duty. Still, the Army must consider the possibility that with the transfer of maintenance personnel out of maneuver units they are creating an even emptier

battlefield in the eyes of the individual combat soldier.

Maneuver commanders also need to be concerned about the cohesion between combat soldiers and combat service support soldiers. They must actively foster a feeling of spiritual unity between them. The feeling of unity is fragile, however, and can be destroyed if either group of soldiers is unable to establish and identify itself with the other. If the feeling of spiritual unity is destroyed, the combat soldier becomes less effective.³⁸

The current relationship between FSBs and their supported maneuver brigades may be effective in promoting a feeling of spiritual unity between combat arms soldiers and combat service support soldiers. The Army really does not know for sure. The relationship between MSTs and their supported maneuver battalions is perhaps the best measure of the strength of the relationship between the FSB and the brigade, but the Army has never formally studied their interaction. Before the Army commits itself to transferring maintenance personnel out of maneuver units, it should understand the moral effect of the change on the combat soldier. As the soldier surveys the world from the trigger end of a weapon, he knows that "friends are dear on the day of battle."³⁹

Cybernetic Domain

I don't know what the hell this
logistics is ... but I want some of
it. - Adm Ernest J. King, CNO

Maneuver units and forward support battalions both face significant challenges in the cybernetic domain under the proposed change in maintenance doctrine represented by the BMS. In some cases, the tactical implications discussed under the cybernetic domain have equal application to either the physical or the moral domain. In all cases, the challenges need to be clearly understood and addressed in a formal manner.

One of the most serious implications in the cybernetic domain revolves around the ownership/stewardship of the equipment of the maneuver unit. This question is not rooted in hand receipts and property book jargon, but in practicality. Under BMS, a company maintenance team (CMT) of the Combat Repair Company (CRC) responds to the call of a maneuver unit to inspect and repair an inoperable item of equipment. The mechanics of the CMT diagnose the problem and determine what resources are required to complete the repair. Their actions are controlled by the Maintenance Operations Center (MOC) of the CRC. The item of equipment may be repaired immediately,

recovered further to the rear, or left in place awaiting either repair parts or priority in evacuation.

The maneuver commander has no control over the disposition of his equipment. His job is to report a malfunction in his equipment, and await the actions of the CMT. The CRC commander determines what happens to the equipment.

A related, and more serious, issue concerns the decision to pull equipment out of battle. Under our current doctrine the maneuver unit commander is responsible for evacuating his equipment to the rear for repair. He makes the tactical judgement of whether to continue to fight the damaged item of equipment or to pull it out of the fight. He is responsible for the accomplishment of his tactical mission and for the sustainment of his unit. Under BMS, he is not responsible for making the decision to evacuate his equipment. This is a problem if a weapon system is removed from the battle without his knowledge.

Another tactical implication of BMS in the cybernetic domain is the increased span of control of the FSB. In a recent article in Military Review, Colonel Bud Jeffries of the U.S. Army Command and General Staff College argued that a good rule of thumb is that four subunits are the maximum span of control for an average combat commander, while three is desirable.⁴⁰

The desire to reduce the span of control of maneuver commanders results in a corresponding increase in the span of control of the FSB commander. If similar proposals to the BMS in the areas of petroleum, ammunition, and general supply support are adopted, the FSB commander will have to control six companies. Given the multifunctional nature of the forward support battalion, this span of control may be too great.

The commander of the CRC has a span of control problem as well. The task of directing all of the maintenance support to each of the maneuver companies in a brigade is a daunting one. The developers of the BMS must have understood this to some extent, for they specify that the CRC commander should be a major. Still, the rank and experience of the CRC commander is only one factor to consider when evaluating his effective span of control.

Maintenance units have historically been underequipped in both the type and number of communications equipment they are authorized. Observer/controllers at the NTC report that the maintenance control officers of DS maintenance companies often have problems communicating with MSTs while they are forward trying to repair inoperable equipment.⁴¹ The most common reason for this problem is a lack of operational radios with the necessary

range to communicate from the BSA to the forward areas of the brigade.

Even if the distribution of communications equipment to the FSB is increased, the CRC would have a difficult task trying to control the CMTs. The problem is identifying and broadcasting the locations of the CMTs, the equipment to be repaired, and the enemy.

Emerging technology may help solve this problem. The Army is considering the development of the "Battalion and Below Command and Control" system (B^2C^2), a computerized network which would link company commanders and individual vehicles. The Communications and Electronics Command (CECOM) reports that this system is capable of continuously broadcasting the locations of both friendly and enemy units.⁴² Such a system could be installed in every company maintenance team vehicle and used by the MOC to control the movement of the CMTs on the battlefield.

Mobile Subscriber Equipment (MSE) and the integration of position location reporting systems (PLRS) with existing radio technology could also improve the ability of both maneuver unit and maintenance vehicles to broadcast their exact locations and facilitate forward repair efforts.

The roles of the battalion and brigade supply officers may change with the transfer of maintenance responsibility. Both officers are intimately involved

in monitoring the operational readiness of their units and prioritizing maintenance efforts to reflect the guidance of the commander. Under BMS, the brigade materiel readiness officer is the commander of the CRC. The responsibilities of battalion and brigade supply officers must therefore be carefully reevaluated if BMS is adopted.

The relationship between the forward support battalion and its supported maneuver brigade changes with the transfer of maintenance responsibility from the maneuver units. The brigade now has a non-detachable umbilical cord to the FSB. For that matter, all of the units which receive similar maintenance support from the FSB share an identical umbilical cord. They cannot be detached without depriving them totally of their sustainment.

Unity of effort is another issue associated with the proposed transfer of maintenance resources. Unity of effort can be obtained through either unity of command or through the use of cooperation and coordination.⁴³ Will a brigade have unity of effort when the division of sustainment responsibility cuts across command lines?

The answer lies in the fact that unity of effort is not dependent on unity of command. Actions in and around St. Vith during the Battle of Bulge attest to the fact that academic problems of "attached," "in

support," and "operational control" never arose when the chips were down.⁴⁴ Still, it is a grave concern if the execution of our doctrine relies upon loosely defined relationships between units.

In discussing the tactical implications of transferring maintenance from maneuver units, we must ask, "Have we unburdened the maneuver commander like we said we would?" Or, have we imposed uncertainty on the maneuver commander to the extent that he is not unburdened at all? Burdens, after all, can be mental as well as physical. The questions remains unanswered for now.

Conclusion

The proposed transfer of organizational maintenance responsibility from the maneuver battalion to the forward support battalion represents a significant change to the Army's maintenance doctrine. The debate over the advantages and disadvantages of the proposed transfer has stalled approval of the new doctrine, and made it possible to organize a formal discussion of its tactical implications.

A survey of the Soviet, German, and British armies reveals that the maintenance doctrine of each is founded upon the echelonment of maintenance resources and responsibilities. The British and German armies

have established maintenance responsibilities at the maneuver battalion level to a degree consistent with those established in the U.S. Army. Neither the British nor the German armies appear to be considering a shift from this aspect of their maintenance doctrine. The Soviet Army has established a lesser maintenance responsibility at their maneuver battalion level, but may be reconsidering that decision in light of their experiences in Afghanistan.

The inference is that military leaders in each of these armies believe that there is a requirement to fix a maintenance responsibility at the maneuver unit level. They appear willing to pay the price in maintenance resources to support that belief. In the case of the Soviets, they are moving in this direction after a long experiment with "unburdening" their maneuver battalions of logistics requirements.

There are tactical implications to the proposed transfer of maintenance responsibilities in the physical, moral, and cybernetic domains of battle. In the physical domain of battle, the tactical implications center around the feasibility and effectiveness of the proposed change. The bottom line is whether the forward support battalion will do a better job than the maneuver battalion at repairing equipment.

In the moral domain, the tactical implications center around the impact of separating the fighter from the sustainer. Military leaders need to carefully assess the impact of creating organizational distinctions between front line soldiers and combat service support soldiers.

In the cybernetic domain of battle, the tactical implications include a redefinition of the roles of maneuver and FSB commanders, as well as their operations and logistics staff officers. Under BMS, the brigade is dependent on the FSB for performing or coordinating all repairs to its equipment. The combat power of the brigade is so dependent on the support of the FSB that the Army needs to reconsider assigning FSBs to brigades instead of division support commands (DISCOMs).

The CASCOM is now considering alternatives to the transfer of unit maintenance responsibility. One alternative is to restructure the logistics elements, including the organic maintenance platoon, of the maneuver battalion into a combat service support (CSS) company.

The Army should consider this alternative and all alternative maintenance doctrines in a dispassionate and formal manner, recognizing their potential impact on maneuver and CSS units in the physical, moral, and cybernetic domains of battle. Our consideration of the

tactical implications of transferring unit maintenance responsibility from maneuver battalions to FSBs demonstrates that it is a bad idea. The Army should not adopt it as part of any ground maintenance doctrine.

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